**Patent** **Attorney Docket No.: 12553/73**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

| | | |
|---|---|---|
| APPLICANTS | : | Ming Gao YAO et al. |
| SERIAL NO. | : | 10/634,269 |
| FILED | : | August 5, 2003 |
| FOR | : | METHOD AND APPARATUS FOR IMPROVING THE DESIGN AND MANUFACTURING PROCESS OF A HARD DISK DRIVE MAGNETIC HEAD ARM ASSEMBLY BY WELDING SPECIFIC COMPONENTS |
| GROUP ART UNIT | : | 2627 |
| EXAMINER | : | Mark S. BLOUIN |

M/S: APPEAL BRIEF – PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

**ATTENTION: Board of Patent Appeals and Interferences**

**APPEAL BRIEF**

Dear Sir:

This brief is in furtherance of the Notice of Appeal, filed in this case on September 5, 2008.

## 1. REAL PARTY IN INTEREST

The real party in interest in this matter is SAE Magnetics (H.K.) Ltd. (Recorded October 17, 2003; Reel/Frame 014597 / 0164).

## 2. RELATED APPEALS AND INTERFERENCES

There are no related appeals.

## 3. STATUS OF THE CLAIMS

Claims 1-5, 7-14 and 16-32 are pending and rejected. Claims 6 and 15 were previously cancelled. No claims are withdrawn, objected to, or allowed.

No amendments to the claims were made after the Final Office Action dated June 4, 2008.

The claims in their current form (including those claims under appeal) are presented in The Appendix – Section 8 – Claims on Appeal.

## 4. STATUS OF AMENDMENTS

The claims listed on page A-1 of the Appendix attached to this Appeal Brief reflects the present status of the claims.

## 5. SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention relates to magnetic hard disk drives. More specifically, the present invention relates to a system for an improved magnetic head arm assembly (HAA).

The embodiment of independent claim 1 generally describes a system for a magnetic head arm assembly (HAA) comprising a first component having a first cavity (*e.g.*, paragraph [0016], line 7 – Figure 3, 306, 308) to be coupled to an arm portion having an arm cavity (*e.g.*, paragraph [0016], line 11 – Figure 3, 312) via insertion of a pin element (*e.g.*, paragraph [0016], line 11 – Figure 3, 310), independent of the first component and the arm portion, through the first cavity and the arm cavity (*e.g.*, paragraph [0016], lines 7-10 – Figure 3, 306, 308) and welded between said first component and said arm portion (*e.g.*, paragraph [0019], lines 1-4), wherein the surface of said pin element is directly attached to and physically connected along a surface of said first component and a surface of said arm portion (*e.g.*, paragraph [0016], lines 1-14 – Figure 3), and wherein said first component is selected from the group consisting of a head suspension portion (*e.g.*, paragraph [0017], line 1-4 – Figure 4, 406) and a flex cable portion (*e.g.*, paragraph [0021], line 1-3 – Figure 7, 702).

The embodiment of independent claim 10 generally describes a method for a magnetic head arm assembly (HAA) comprising coupling a first component having a first cavity (*e.g.*, paragraph [0016], line 7 – Figure 3, 306, 308) to an arm portion having an arm cavity (*e.g.*, paragraph [0016], line 11 – Figure 3, 312) via insertion of a pin element (*e.g.*, paragraph [0016], line 11 – Figure 3, 310), independent of the first component and the arm portion, through the first cavity and the arm cavity (*e.g.*, paragraph [0016], lines 7-10 – Figure 3, 306, 308) and welded between said first component and said arm portion (*e.g.*, paragraph [0019], lines 1-4), wherein the surface of said pin element is directly attached to and physically connected along a surface of said first component and a surface of said arm portion (*e.g.*, paragraph [0016], lines 1-14 – Figure 3), and wherein said first component is selected from the group consisting of a head

suspension portion (*e.g.*, paragraph [0017], line 1-4 – Figure 4, 406) and a flex cable portion (*e.g.*, paragraph [0021], line 1-3 – Figure 7, 702).

The embodiment of independent claim 19 generally describes a system for a magnetic head arm assembly (HAA) comprising a first component having a first cavity (*e.g.*, paragraph [0016], line 7 – Figure 3, 306, 308) to be coupled to a second component having an arm cavity (*e.g.*, paragraph [0016], line 11 – Figure 3, 312) via a pin (*e.g.*, paragraph [0016], line 11 – Figure 3, 310) independent of the first component and the second component and welding said first component to said second component (*e.g.*, paragraph [0019], lines 1-4), wherein said first component is selected from the group consisting of a head suspension portion, a flex cable portion, and a flex circuit portion (*e.g.*, paragraph [0017], line 1-4 – Figure 4, 406 and paragraph [0021], line 1-3 – Figure 7, 702); and said second component is an arm portion and wherein the surface of said pin element is directly attached to and physically connected along a surface of said first component and a surface of said arm portion (*e.g.*, paragraph [0016], lines 1-14 – Figure 3).

The embodiment of independent claim 27 generally describes a method for a magnetic head arm assembly (HAA) comprising welding a first component having a first cavity (*e.g.*, paragraph [0016], line 7 – Figure 3, 306, 308) to a second component having an arm cavity (*e.g.*, paragraph [0016], line 11 – Figure 3, 312) via a pin (*e.g.*, paragraph [0016], line 11 – Figure 3, 310), wherein the first component and the second component are coupled via a pin (*e.g.*, paragraph [0016], line 11 – Figure 3, 310) independent of the first component and the second component; and wherein said first component is selected from the group consisting of a head suspension portion, a flex cable portion, and a flex circuit portion (*e.g.*, paragraph [0017], line 1-

4 – Figure 4, 406 and paragraph [0021], line 1-3 – Figure 7, 702); and said second component is an arm portion and wherein the surface of said pin element is directly attached to and physically connected along a surface of said first component and a surface of said arm portion (*e.g.*, paragraph [0016], lines 1-14 – Figure 3).

## 6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

**A.** Are claims 1-4, 10-13, 19-26 and 27-32 anticipated under 35 U.S.C. §102(b) by Cox et al. (hereinafter "Cox"), (US 5,644,452)?

**B.** Are claims 5, 7-9, 14 and 16-18 are rendered obvious under 35 U.S.C. §103(a) over Cox in view of Cubero Pitel (hereinafter "Cubero Pitel"), (US 6,160,239)?

## 7. ARGUMENT

**A.** Claims 1-4, 10-13, 19-26 and 27-32 are not anticipated by Cox.

Applicants respectfully submit the cited references do not teach or suggest at least a system for a magnetic head arm assembly wherein the surface of a pin element is directly attached to and physically connected along a surface of a first component and a surface of an arm portion (*e.g.*, as described in claim 1).

Such a feature is neither shown nor suggested by the cited Cox reference. *See e.g.*, cited Figs. 1 and 2. In Figure 1, the cited pin element (18) is not directly attached to either the cited first component (14) or the cited arm component (16); the cited pin element (18) is instead inserted through the guide hole 21 and hole 20, precluding direct attachment and physical connection. Similarly, in Figure 2, the guide hole 46 and hole 44 prevent the direct attachment or

physical connection of a pin surface along the surface of a first component or the surface of an arm portion. The Examiner asserts the pin 18 is directly attached to and along a surface of a first component (flex cable 14) on ground run surface 22 by the solder, and is press fitted into hole 20 of arm portion 16. *See* Office Action dated 6/4/2008, paragraph 3. Appellants disagree for at least reasons described above, and submit the description of Cox supports Appellants' position as well. For example, column 3, lines 32-44 states: "Each solder joint 12 includes a pin 18 inserted into hole 20 in rotary arm 16. Each hole 20 can be drilled into rotary arm 16 at a cost which is cheaper to produce than the tapped holes required to secure flex cable 14 to rotary arm 16 with a screw. Pin 18 is pressed into hole 20 in rotary arm 16. Flex cable 14 includes a guide hole 21 for receiving each pin 18 when flex cable 14 is properly aligned adjacent to rotary arm 16. Hole 21 is preferably larger in area than hole 20 so that pin 18 can easily fit through it. In preferred embodiments, a solder pad is placed around hole 21. After flex cable 14 is placed over pin 18, it can be soldered in place, thus securing flexible cable 14 to rotary arm 16." This section describes pin 18 is pressed into hole 20, and that hole 21 is larger than hole 20. Therefore, if pin is pressed into hole 20, and hole 21 is larger than hole 20, it stands to reason that pin 18 is <u>not</u> directly attached to and physically connected to alleged first arm portion 14 – as shown in Figure 1 and as argued above. As such, Figure 1 clearly shows that pin 18 is not directly attached to and physically connected to at least the alleged first arm portion 14. Therefore, the current rejection is lacking.

**B.** Claims 5, 7-9, 14 and 16-18 are <u>are not</u> rendered obvious over Cox in view of Cubero Pitel.

Cubero Pitel fails to make up for the deficiencies of Cox. Cubero Pitel is directed toward a laser soldering procedure applicable to the joining of pins over printed circuit boards. However, it does not describe at least these relevant limitations of claim 1 anywhere; independent claims 10, 19, and 27 recite similar limitations that are not found in the Cubero Pitel as well.

Since at least these features of independent claims 1, 10, 19 and 27 are missing from the cited references, claims 1, 10, 19 and 27 are not anticipated under 35 U.S.C. § 102(b). Claims 2-5, 7-9, 11-14, 16-18, 20-26, and 28-32 are allowable as depending from the allowable base claims 1, 10, 19 and 27.

Appellants therefore respectfully request that the Board of Patent Appeals and Interferences reverse the Examiner's decision rejecting claims 1-5, 7-18, and 20-24 and direct the Examiner to pass the case to issue.

The Examiner is hereby authorized to charge the appeal brief fee of **$540.00** and any additional fees which may be necessary for consideration of this paper to Kenyon & Kenyon Deposit Account No. **11-0600**.

Respectfully submitted,

KENYON & KENYON LLP

Date: November 5, 2008

By: /Sumit Bhattacharya/
Sumit Bhattacharya
(Reg. No. 51,469)

KENYON & KENYON LLP
333 West San Carlos St., Suite 600
San Jose, CA 95110
Telephone: (408) 975-7500
Facsimile: (408) 975-7501

# APPENDIX

(Brief of Appellants Ming Gao YAO et al.
U.S. Patent Application Serial No. 10/634,269)

## 8. CLAIMS ON APPEAL

The claims in their current form (including those claims under appeal) are presented below:

1. (Previously Presented) A system for a magnetic head arm assembly (HAA) comprising:

a first component having a first cavity to be coupled to an arm portion having an arm cavity via insertion of a pin element, independent of the first component and the arm portion, through the first cavity and the arm cavity and welded between said first component and said arm portion, wherein the surface of said pin element is directly attached to and physically connected along a surface of said first component and a surface of said arm portion,

and wherein said first component is selected from the group consisting of a head suspension portion and a flex cable portion.

2. (Original) The system of claim 1, wherein said head suspension portion is a hard disk drive head gimbal assembly (HGA).

3. (Original) The system of claim 1, wherein said flex cable portion is a hard disk drive flex cable.

4. (Original) The system of claim 1, wherein said arm portion is a hard disk drive arm.

5. (Original) The system of claim 1, wherein said pin element is a copper welding pin.

6. (Cancelled).

7. (Original) The system of claim 5, wherein said pin element is cylindrical; said first cavity is a circular hole with a diameter enabling insertion of said pin element; and said arm cavity is a circular recession with a diameter enabling insertion of said pin element.

8. (Original) The system of claim 5, wherein said pin element has a rectangular cross-section; said first cavity is a rectangular opening with a size enabling insertion of said pin element; and said arm cavity is a rectangular recession with a size enabling insertion of said pin element.

9. (Original) The system of claim 5, wherein said pin element is interference fitted into said arm cavity and said pin element is soldered to first component to couple said first component to said arm portion.

10. (Previously Presented) A method for a magnetic head arm assembly (HAA) comprising:

coupling a first component having a first cavity to an arm portion having an arm cavity via insertion of a pin element, independent of the first component and the arm portion, through the first cavity and the arm cavity and welded between said first component and said arm portion, wherein the surface of said pin element is directly attached to and physically connected

along a surface of said first component and a surface of said arm portion,

and wherein said first component is selected from the group consisting of a head suspension portion and a flex cable portion.

11. (Original) The method of claim 10, wherein said head suspension portion is a hard disk drive head gimbal assembly (HGA).

12. (Original) The method of claim 10, wherein said flex cable portion is a hard disk drive flex cable.

13. (Original) The method of claim 10, wherein said arm portion is a hard disk drive arm.

14. (Original) The method of claim 10, wherein said pin element is a copper welding pin.

15. (Cancelled).

16. (Original) The method of claim 14, wherein said pin element is cylindrical; said first cavity is a circular hole with a diameter enabling insertion of said pin element; and said arm cavity is a circular recession with a diameter enabling insertion of said pin element.

17. (Original) The method of claim 14, wherein said pin element has a rectangular cross-section; said first cavity is a rectangular opening with a size enabling insertion of said pin

element; and said arm cavity is a rectangular recession with a size enabling insertion of said pin element.

18. (Original) The method of claim 14, wherein said pin element is interference fitted into said arm cavity and said pin element is soldered to first component to couple said first component to said arm portion.

19. (Previously Presented) A system for a magnetic head arm assembly (HAA) comprising:

a first component having a first cavity to be coupled to a second component having an arm cavity via a pin independent of the first component and the second component and welding said first component to said second component, wherein

said first component is selected from the group consisting of a head suspension portion, a flex cable portion, and a flex circuit portion; and

said second component is an arm portion

and wherein the surface of said pin element is directly attached to and physically connected along a surface of said first component and a surface of said arm portion.

20. (Original) The system of claim 19, wherein said first component is a hard disk drive slider frame and said second component is selected from a group consisting of a hard disk drive head gimbal assembly (HGA) and a hard disk drive slider.

21. (Original) The system of claim 19, wherein said head suspension portion is a hard disk drive head gimbal assembly (HGA).

22. (Original) The system of claim 19, wherein said flex cable portion is a hard disk drive flex cable.

23. (Original) The system of claim 19, wherein said flex circuit portion is a hard disk drive bridge flex circuit (BFC).

24. (Original) The system of claim 19, wherein said arm portion is a hard disk drive arm.

25. (Original) The system of claim 19, wherein said first component is coupled to said second component via a type of welding selected for the group consisting of ultrasonic welding, solder bump welding, and laser welding.

26. (Original) The system of claim 20, wherein said first component is coupled to said second component via a type of welding selected for the group consisting of ultrasonic welding, solder bump welding, and laser welding.

27. (Previously Presented) A method for a magnetic head arm assembly (HAA) comprising:

welding a first component having a first cavity to a second component having an arm cavity, wherein the first component and the second component are coupled via a pin independent of the first component and the second component; and wherein

said first component is selected from the group consisting of a head suspension portion, a flex cable portion, and a flex circuit portion; and

said second component is an arm portion and wherein the surface of said pin element is directly attached to and physically connected along a surface of said first component and a surface of said arm portion.

28. (Original) The method of claim 27, wherein said first component is a hard disk drive slider frame and said second component is selected from a group consisting of a hard disk drive head gimbal assembly (HGA) and a hard disk drive slider.

29. (Original) The method of claim 27, wherein said head suspension portion is a hard disk drive head gimbal assembly (HGA).

30. (Original) The method of claim 27, wherein said flex cable portion is a hard disk drive flex cable, said flex circuit portion is a hard disk drive bridge flex circuit (BFC), and said arm portion is a hard disk drive arm.

31. (Original) The method of claim 27, wherein said first component is coupled to said second component via a type of welding selected for the group consisting of ultrasonic welding, solder bump welding, and laser welding.

32. (Original) The method of claim 28, wherein said first component is coupled to said second component via a type of welding selected for the group consisting of ultrasonic welding, solder bump welding, and laser welding.

## 9. EVIDENCE APPENDIX

No further evidence has been submitted with this Appeal Brief.

## 10. RELATED PROCEEDINGS APPENDIX

Per Section 2 above, there are no related proceedings to the present Appeal.